

some species of *Fomes* consists of true basidiospores which have been carried upward by gentle currents of air, such as arise from differences of temperature at different levels, and have lodged on the pilei. In support of this view the author points out that other objects in the vicinity of the fungi also become covered with spores. A simple experiment lends further support to this view. Pieces of cardboard pinned on the surface of sporophores of *Polyporus applanatus* in May were covered with spore powder in July, as were also all portions of the surfaces of the fruit bodies except the areas covered by the paper. While not venturing to explain the pertinacious adherence of the spores to surfaces, the author suggests that they stick fast by virtue of a gelatinous cutin layer. Regarding the spore powder on the surface of these fungi, mycologists have generally adopted the view of SCHULZER, according to which the powder consists of conidia whose origin on the surface of the pileus is minutely described by him. Although opposing the view of SCHULZER, ROMELL does not speak of repeating the histological examination of that investigator. If the explanation of ROMELL is correct, it is a matter for inquiry why this peculiarity of spore distribution is restricted to a few members of the genus *Fomes* and does not occur more generally among the Hymenomycetes. Even among the caespitose Agaricaceae, only those parts of the pilei overtopped by others are usually covered by spores, while the exposed parts generally remain free.—H. HASSELBRING.

Journal of Forestry.—With the issue of January 1917 the *Journal of Forestry*²⁸ takes the place of the *Proceedings of the Society of American Foresters* and of the *Forestry Quarterly*. This change is in no sense an absorption of either journal by the other, but rather an amalgamation of the best features of the two original publications is intended. In continuing the activities of the two parent publications it is expected that the new one will contain 800 to 1200 pages per annual volume.

The first number of the new journal sets a high standard of excellence which promises well for its future. Among its leading articles is a critical review of 30 years of forestry work of the Federal Government by FERNOW. Some slight idea of the progress involved may be formed from the increase in appropriations from \$10,000 in 1886 to over \$5,000,000 at present. In addition to the Federal organization, 30 states have organized forest departments and 13 now possess state forests. There is also a thorough discussion of "continuous forest production of privately owned timberlands" by KIRKLAND, and an excellent critical review of recent papers on the moisture withholding power of soils by MOORE. Perhaps still more useful to botanists and ecologists is an extended glossary of the technical terms of forestry now used by the profession in America.

²⁸ *Journal of Forestry*. 8 monthly issues per year. Pub. by the Society of American Foresters. Washington, D.C. \$3.00 per year.

It is safe to predict that the new journal will be of increasing interest to all botanists, and more particularly so to ecologists who see in forestry the practical application of their more theoretical studies.—GEO. D. FULLER.

Endemism and the mutation theory.—WILLIS, in papers previously reviewed in this journal,²⁹ working upon the flora of Ceylon, has proposed the theory that relative endemism is determined by relative age, the youngest species being the endemics. RIDLEY³⁰ points out that WILLIS has based his arguments upon statistics gathered from herbarium specimens; and illustrates that such will not agree with field statistics, the commonest species sometimes being poorly represented in the herbarium. In connection with his theory WILLIS states that "very common" plants could not disappear without a geological catastrophe. This RIDLEY has shown to be inaccurate, illustrating from his own personal experience and from well known historical evidence that common species have disappeared within a few years, due to parasites, the activities of man, and relatively slight climatic changes. RIDLEY claims that the Ceylon endemics are relics, since there are no other local species from which they could have been evolved recently.

The remainder of the paper is a criticism of the mutation theory as used by WILLIS to explain the origin of the Ceylon flora. RIDLEY's arguments and evidence are of the characteristic Neo-Darwinian type. As an attack upon the mutation theory, or WILLIS' application of it, the paper is unconvincing to the reviewer.—MERLE C. COULTER.

Heath and grassland.—FARROW³¹ has described an interesting area of Norfolk and Suffolk Counties, England, where upon sandy soil with only 22.5 inches of annual rainfall there develops a transition from a heath dominated by *Calluna vulgaris* to a grassland with a short close turf in which *Festuca ovina* and *Agrostis vulgaris* are the most abundant species. The sterility of the soil is such that some has never been cultivated and much of the rest once farmed has long since been abandoned. The grassland seems to present the nearest approach to continental steppe conditions to be found in Great Britain.

In the second of his papers the author finds that the chief factor in the invasion of the heath by the grassland is the destruction of the *Calluna vulgaris* by an overpopulation of rabbits. Once the *Calluna* becomes weakened by its leaves being eaten by the rabbits, a luxuriant growth of *Cladonia* appears to be able to smother it and to hasten its death. In the absence of rabbits

²⁹ Rev. in BOT. GAZ. 61:82. 1916; 62:160. 1916; 63:419. 1917.

³⁰ RIDLEY, H. H., On endemism and the mutation theory. Ann. Botany 30:551-574. 1916.

³¹ FARROW, E. P., On the ecology of the vegetation of Breckland. I. General description of Breckland and its vegetation. Jour. Ecology 3:211-228. 1915; II. Factors relating to the relative distribution of *Calluna* heath and grass heath in Breckland. Jour. Ecology 4:57-64. 1916.